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(54) **MICROMACHINED PIEZOELECTRIC Z-AXIS GYROSCOPE**

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See application file for complete search history.

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(57) **ABSTRACT**

This disclosure provides systems, methods and apparatus, including computer programs encoded on computer storage media, for making and using gyroscopes. Such gyroscopes may include a central anchor, a sense frame disposed around the central anchor, a plurality of sense beams configured for connecting the sense frame to the central anchor and a drive frame disposed around and coupled to the sense frame. The gyroscope may include pairs of drive beams disposed on opposing sides of the sense frame. The gyroscope may include a drive frame suspension for substantially restricting a drive motion of the drive frame to that of a substantially linear displacement along the first axis. The sense frame may be substantially decoupled from drive motions of the drive frame. Such devices may be included in a mobile device, such as a mobile display device.

20 Claims, 54 Drawing Sheets